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CERTIFICATE OF CORRECTION

PATENT NO. : 7,062,759 B2
APPLICATION NO. : 09/839910
DATED : June 13, 2006
INVENTOR(S) : Robison

Page 1 of 5

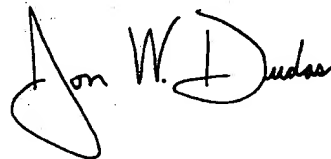
It is certified that error appears in the above-identified patent and that said Letters Patent is hereby corrected as shown below:

Delete Title page illustrating a figure(s), and substitute therefor, new Title page illustrating a figure(s). (attached)

Delete drawing sheet 1,3 and 4A, and substitute therefor drawing sheet 1-,3 and 4A. (attached)

Signed and Sealed this

Fourth Day of September, 2007

A handwritten signature in black ink, appearing to read "Jon W. Dudas". The signature is stylized with a large, looped initial "J" and a cursive "Dudas".

JON W. DUDAS
Director of the United States Patent and Trademark Office

(12) **United States Patent**
Robison

(10) Patent No.: **US 7,062,759 B2**
(45) Date of Patent: ***Jun. 13, 2006**

(54) **METHOD AND SYSTEM FOR
INTERPROCEDURAL SIDE EFFECT
ANALYSIS**

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(73) Assignee: Intel Corporation, Santa Clara, CA (US)

(*) Notice: Subject to any disclaimer, the term of this patent is extended or adjusted under 35 U.S.C. 154(b) by 717 days.

This patent is subject to a terminal disclaimer.

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G06F 9/43 (2006.01)

(52) U.S. Cl. 717/141; 717/155; 717/151;
717/154; 717/157; 717/141; 717/156

(58) Field of Classification Search 717/159,
717/4, 160, 133, 140-161
See application file for complete search history.

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Primary Examiner—Kakali Chaki

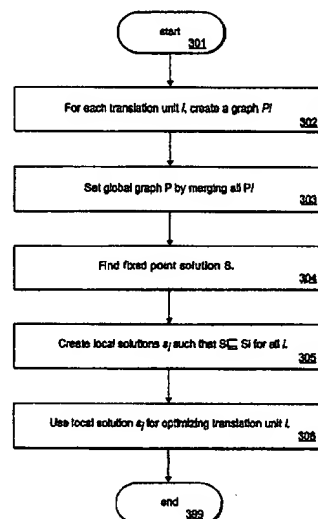
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(57) **ABSTRACT**

Interprocedural side-effect analysis is performed by constructing a fixed-point problem graph for each translation unit of a software program having a plurality of separately compilable components. The method performs analyzing each routine, of a software program having a plurality of separately compilable routines, to create a plurality of local side-effect problems for each routine; and merging the local side-effect problems to create a global side-effect problem.

18 Claims, 13 Drawing Sheets



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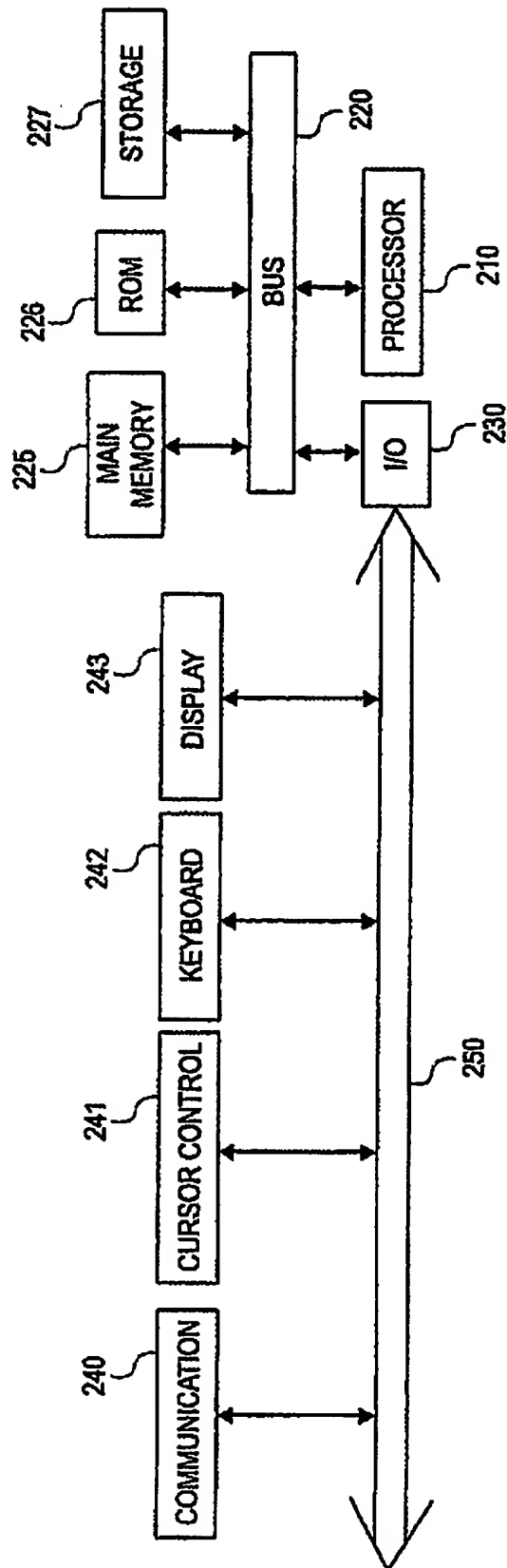


FIG. 1
(PRIOR ART)

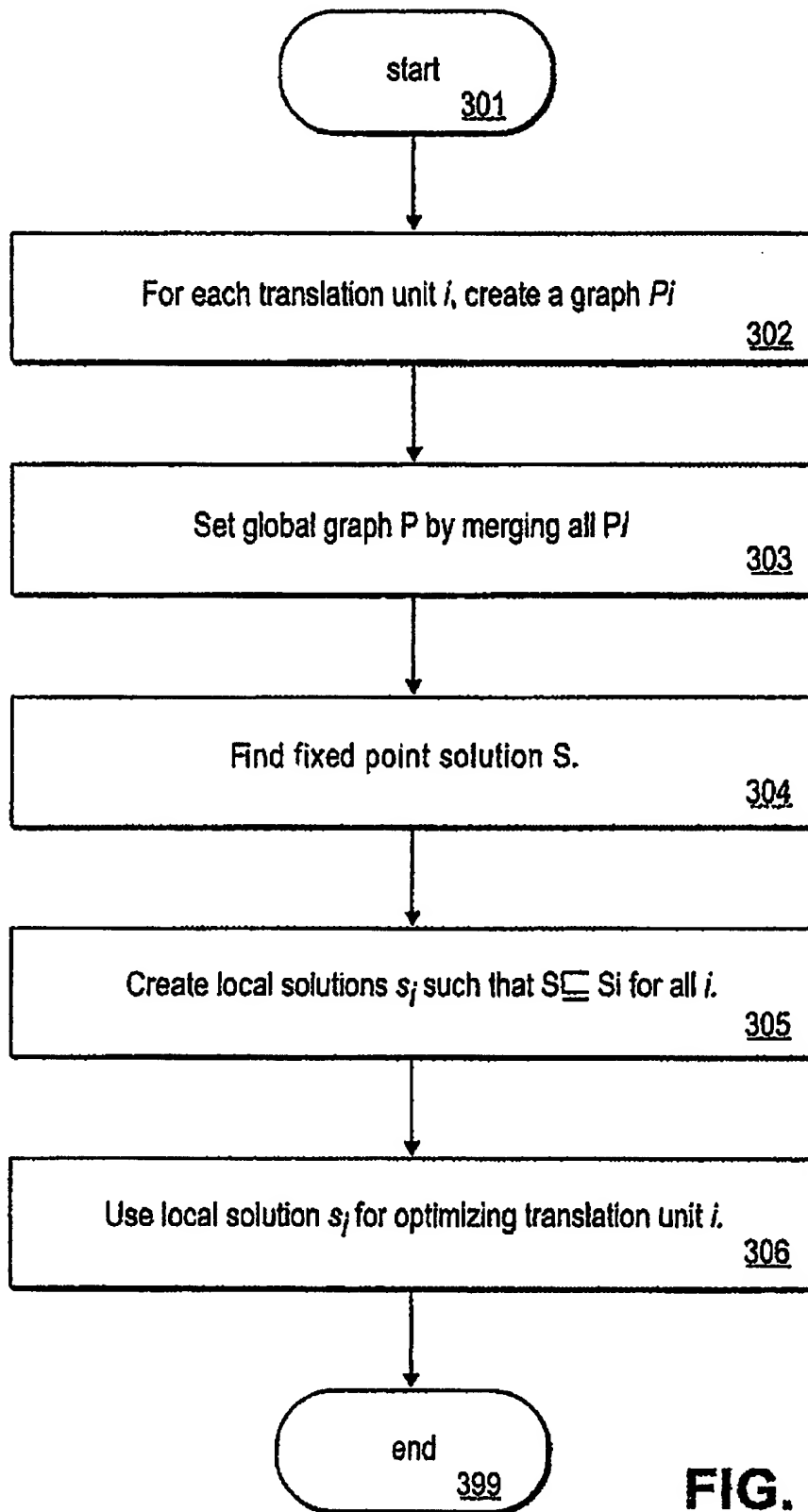


FIG. 3

Function	Function (x,y)
410 ~ TOP	(PURE,PURE)
420 ~ COPY	(y,y)
430 ~ IN_TO_LOST	if $y \leq \perp \Rightarrow (\text{LOST}, \text{LOST})$ otherwise $\Rightarrow (\text{PURE}, \text{PURE})$
440 ~ UNRETURN	
450 COPY_AND_IN_TO_LOST	if $y = \text{LOST} \Rightarrow (\text{LOST}, \text{LOST})$ otherwise $\Rightarrow (z, z)$ where $z = y \sqcup \text{OI}$
460 ~ CAT_FORMAL	if $y \leq \perp \Rightarrow (\text{LOST}, \text{LOST})$ otherwise $\Rightarrow (y, y)$
470 ~ CAT_ACTUAL	(y, PURE)
	(PURE, y)
480 ~ GATE	if $x = \text{LOST} \Rightarrow (\text{LOST}, \text{LOST})$ else if $x < R(z, z)$ where $z = (x \text{ OI}) \sqcap y$ else (z, z) where $z = (x \sqcup \text{OI})$

FIG. 4A